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ABSTRACT

Increases in class size, time constraints, and class material have pressured educators to develop better ways to present instructional material; this pressure has led to numerous teaching innovations, including many in the area of individualized instruction. This paper focuses on a history of critiques of individualized instruction in the 20th century, especially from 1960 to the present. The three examples of individualized instruction covered include: audio-tutorial, personalized system of instruction, and computer assisted instruction. The discussion of each type of individualized instruction includes a description of the theory and methods, a summary of the benefits as indicated by the designers, an account by the critics, and a response by the supporters; a final section addressing critiques is included. (Contains 19 references.) (AEF)

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Title:

Individualized Instruction: A History of the Critiques

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The improvement of the educational system and the improvement of the act of teaching is a common goal of all educators. Increases in class size, time constraints, and class material have pressured educators to develop better ways to present instructional material. This pressure has led to numerous teaching innovations, including many in the area of Individualized Instruction.

Examples of Individualized Instruction can be seen as far back as ancient Greece with the teachings of Socrates, and recently in the development of sophisticated Computer Managed Instruction in the 1980's and 1990's. Examples of programs of individualized instruction in elementary, secondary, and continuing education have increased throughout the twentieth century, as the demand for new teaching innovations has increased. As in the case with any educational innovation there has been a substantial amount of review of these programs, both of the quality of instruction delivered and of their foundations in theory. These reviews have been both positive and negative.

This paper concentrates on a history of the critiques of Individualized Instruction in the twentieth century, especially form 1960 to present. Three examples of Individualized Instruction will be specifically covered, these include: Audio-Tutorial by S. N. Postlethwait, Personalized System of Instruction by Fred Keller (PSI), and Computer Assisted Instruction (CAI). Recent trends towards Computer Managed Instruction through Instructional Development were not included in this paper. These three examples were chosen based on their importance to present day education.. Popularity does not in itself make something lasting and sound. Widespread acceptance of technique without sound evidence for that technique is just the formula for producing another "educational fad" (Powers, 1972, p.4).

The discussion of each type of Individualized Instruction will include: a brief description of the theory and methods, a summary of the benefits as indicated by the designers, an account by the critics, and a response by the supporters is applicable. A final section addressing general critiques of Individualized Instruction will be included at the end of the document.

Audio Tutorial

Audio-Tutorial is a method of Individualized Instruction developed by S. N. Postlethwait in 1961 at Purdue University. His purposes were to find an improved method of teaching botany to a larger number of college students and to effectively assist the students who possessed only limited backgrounds in the subject (Snortland, 1982, p.3). The development of an A-T program requires a significant amount of planning and time by the instructor before the course is implemented. Although there is some room for modification for specific programs to be taught, the general principles remain the same. The student has access to a taped presentation of a specifically designed program that directs their activities one at a time. The criteria for an effective educational program that Postlethwait used in designing A-T are repetition, concentration, association, unit steps, use of the communication vehicle appropriate to the objective, use of multiplicity of approaches, and use of an integrated experience approach (Couch, 1983, p.6).

There are many benefits of Audio-Tutorial as described by Postlethwait (1972), these include: an emphasis on student learning rather than on teaching, self-pacing, allowing better students to accelerate, not having students distracted by each other, more individual attention if desired, more students accommodated in less laboratory space with less staff, increased responsibility of learning on the students, and an easy standardization of instruction.

Some of the major criticisms that are common to Audio-Tutorial courses were illustrated by Snortland (1982, p4) upon evaluating a course in Graphics design.

1) "Generally, the students with previous drawing experience were able to endure and prosper from the individualized approach and enjoy it to a greater degree than those who began the course with little or not prior training in the graphics language."
2) "Self Pacing was a definite problem....many students were not ready to master the additional self-discipline required in order to maintain a steady pace."
3) "...the A-T...approach is not for everyone."

The first of these criticisms deals with background knowledge, while the last two deal with responsibility. Some students respond to the responsibility placed upon them, while others do not.

Snortland (1982, p.5) explains "Since many freshmen students are not ready for additional self-discipline required of them in the A-T format, the choice of either a structured approach or an individualized approach should always remain open...".

Another criticism of A-T, especially from modern instructional developers, is that A-T places to heavy an emphasis on teacher control. All of the material and the learning and feedback procedures are dictated by the instructor. The criticism is that this is a severe form of teacher control over the student.

Still further criticism deals with the fear of the machine taking from man the position of instructor. Snortland (1982, p.5) replies to this "Man vs. Machine" argument:

> There is a danger with this teaching method in thinking that the machines can pretty well take over and thereby reduce the need for well qualified and professional teachers. Even though an efficient, workable, and effective teaching program is fairly well in place and de-bugged, it will still be essential to have a core of dedicated teachers around to keep the system oiled and do the many "in house" things necessary to maintain the credibility and integrity of the system as originally designed. There are so many factors which affect the motivation of the students, checkers, tutors, and teachers, that the machines by themselves, without human support, would not only be ineffective, but very likely disastrous.

Another criticism is that there is a high initial dropout rate of students enrolled in A-T courses. The problem centered around the fact that some people were not prepared to take on the amount of responsibility that was required of them in order to complete the course. This is an even bigger problem when one considers that the courses most likely to need an A-T setup are predominately courses with high enrollments and a specific amount of material to be covered for the semester. a majority of these courses are freshman courses to begin with. This makes this problem self defeating if not addressed.

As is the case with most forms of individualized instruction, Audio-Tutorial can be modified to meet the needs of a particular situation. If effectiveness were the only criteria measured, then the conclusion regarding A-T's effectiveness compared to conventional instruction favors S-T by two to one (Couch, 1979, p.3). One must be careful to measure both the benefits and the consequences of an A-T program before implementation.

Personalized System of Instruction

The Personalized System of Instruction, also know as the Keller Plan, was introduced by Dr. Fred Keller in 1964. The Keller Plan is based on 10 accepted educational principles: active responding, positive conditions and consequences, specification of objectives, organization of material, mastery before admancement, evaluation/objective congruence, frequent evaluation, immediate feedback, self-pacing, and personalization (McGraw, 1975, p.4).

The five basic features of the Keller plan are: self-pacing, unit mastery, student tutors, optional motivational lectures, and learning from written material (Couch, 1983, p.7). The design of a course using Keller's Personalized System of Instruction consists of:

> ...breaking the material of the course into several units. .... It entails dividing the material into units one to two weeks long. .... As each unit of material is covered, specific learning objectives are given to the students. These state exactly what a student must know to pass a unit quiz (Grasha, 1977, p.8).

The proper implementation of a PSI Keller plan can be neatly divided into five identifiable states: assessing entering behaviors, specifying objectives, selecting resources and activities, establishing and implementing the course framework, and evaluating student performance (McGraw, 1975, p.6).

Some of the benefits of a Personalized System of Instruction include:

1) "PSI students perform better on all types of examination. PSI students also demonstrate longer retention of material than students n more conventional courses" (McGraw, 1975, p.16).
2) Students report "...learning more than do students in a conventional course" (Grasha, 1977, p. 7).
3) "...student responses in the affective domain are positive toward the PSI approach.", "students have more positive attitudes towards the course" (McGraw, 1975, p.16).
4) PSI can "...increase the motivation for further learning" (Grasha, 1977, p.7).
5) PSI students receive "...a much larger proportion of higher grades, despite controls for grading criteria." (McGraw, 1975, p.20).
6) "Keller Plan students...study more per week than do other students...and they do better on achievement tests than do traditionally-taught student" (Grasha, 1977, p.8).

Given the large amount of benefits of PSI, there have been an equally large number of criticisms. Many of the criticisms are common among many types of individualized instruction. The following are criticisms aimed specifically at the Keller Plan, yet many could apply to Individualized Instruction as a whole.

A first criticism is that there are many types of proven instructional strategies that deal with large groups. Because of the very nature of PSI, these are not possible (Couch, 1983, p.4).

A second criticism is that there is a higher dropout rate in the PSI programs. If a student falls behind early in the program, the likelihood that he/she will drop out because they feel that there is no chance to catch-up with the rest of the class. As stated by Born & Moore (1978, p.2):

"That PSI causes or contributes to student procrastination has been effectively argued".

Their criticism is that procrastination goes unnoticed because students are not monitored often enough. Conyers, Spencer, and Sanches Sosa (1975, p.5) reported that incentives for completion of work on time or in advance increased the students performance in the course.

A third criticism is the concern for students entering a new course is a negative attitude. Because of initial student apprehension towards a personalized instructional program, many students do not develop the sufficient desire to continue learning the material upon completion of the program (Couch, 1983, p.6).

A fourth criticism is that there is a lot of preparation time that goes into any Personalized System of Instruction program. As Couch (1983, p.7) stated, "educators...will find that the development of materials, tests, etc., takes an inordinate amount of their time.

A fifth criticism is that the Keller Plan is based upon Skinnerian conditioning. The criticisms of Behaviorism itself can be in turn applied to PSI (Couch, 1983, p.8).

A sixth criticism is that the Keller Plan decreases human interaction. As Couch (1983, p.89) states, "...instructors might feel alienated from their own courses after setting them up to run without the need of lectures."

A seventh criticism came from Keller himself. He stated that the administration may object to a new system that allows the instructor to "escape" their lecturing responsibilities (Couch, 1983, p.9).

A final criticism is that "Grade-flation" will most certainly come up as a controversial point (Sherman, 1976, p.4). This refers to the fact t students who complete a Keller course generally receive an A for completing the course, or do not complete the course or get a grade.

There are many responses to these criticisms. In response to the criticism that there is not a positive attitude entering the program, proponents state that if the Instructor makes an effort to be positive and enthusiastic towards the course, this enthusiasm will carry over to the students. By the time they leave the course, this initial negative attitude that a student might have had will be long forgotten.

The criticism that there is too much preparation time is answered by the claim that there is equal time gained in the course. Grasha (1977, p.4) wrote: "In trade for the initial time-investment, time will be freed during the course from lectures and demonstrations."

People in support of the Keller Plan, interestingly enough, responded to the accusations that PSI was based on Skinnerian By claiming that Behaviorism is part of education and should be a part of PSI. For instance: "This attitude (negativity towards PSI based on Skinnerian principles), however, overlooks the conditioning nature of education, regardless of the type of instructional technique utilized" (McGraw, 1975, p. 12).

The debate over the effectiveness of Keller's Personalized System of Instruction, with its advantages and disadvantages has been a predominant theme in the literature on Individualized Instruction for the last 25 years. There are indeed instances where a Personalized System of Instruction would be more beneficial than a conventional lecture class. This would apply especially to classes in which enrollment was high, course material was standardized, and faculty resources were scarce. On the other hand, when there is not a shortage of faculty, and the class is not a high enrollment class, the course would better be taught with more conventional methods, yet still based on sound educational principles.

Computer Assisted Instruction

The potential for computer assisted instruction was realized long before the home computer was technologically possible. It is difficult to say when CAI was first developed, but there are some early examples of it. The potential for Individualized Instruction through CAI was realized by John E. Coulson. He pointed out this potential in the article, "Computer-Assisted Instruction and Its Potential for Individualizing Instruction" (1973, p.3). Coulson wrote: "A modern computer has characteristics that closely parallel those needed in any educational system that wishes to provide highly individualized instruction."

The benefits that Coulson (1970, p.3) saw from the computer were:

1) "...it has a very large memory capacity that can be used to store instructional content material or....to generate such material,
2) "The computer can perform complex analyses of student responses by keyboard, punched cards, electronic pen, or other techniques into the computer."
3) "The computer can make decisions based on the assessments of student performance, matching resources to individual student needs" (Coulson, 1970, p.4).

Other benefits in the area of software that might or might not have seemed a possibility in 1970 include digitization of speech and video, work prediction software, alternative keyboards, and switches with appropriate software. Computer Assisted Instruction has come farther in dealing with handicapped and disabled students than possibly could have been realized at the time. These benefits and more were borne out later, yet for every advantage of a tool, one can usually find a disadvantage.

Some of the side effects of computer assisted instruction are stated by Henry F. Olds in an article entitled "The Microcomputer and the Hidden Curriculum'> Olds criticized Computer assisted instruction for its hidden side-effects. Some of these include:

1) "Learning is in control of some unknown source that determines almost all aspects of the interactive process. To learn one must suspend all normal forms of interaction and engage only in those called for by the program" (Olds, 1985, p.5).
2) "Learning is an isolated activity to be carried on primarily in a one-to-one interaction with the computer. Normal inter-human dialogue is to be suspended while learning with the computer" (Olds, 1985, p.5).
3) "Learning involves understanding (psyching out) how the program expects one to behave and adapting one's behavior accordingly. One must suspend idiosyncratic behavior" (Olds, 1985, p.5).

Some of these criticisms were answered later by Olds (1985, p.6) when he stated: "...time on-line needs to be mixed with plenty of opportunities for human interaction." and CAI should allow people to

"...jump around within the program structure...." These partially answer the criticisms about decreased human interaction and a lack of room for creativity.

Computer Assisted Instruction is quickly becoming the forerunner in Individualized Instruction. As home computers become more powerful and less expensive, the possibilities grow larger and larger. However, many of the criticisms will not go away with improved technology. There needs to be an improvement in the design of the software used, as well as an improvement in the methodology used to implement computers into education, specifically in school reform. Computer Managed Instruction through Instructional Development is the most recent trend in school reform. It addresses the need of school systems and offers solutions through instructional development. an analysis of the learners, the environment, economics, and instructors is conducted to best prescribe a program that will match the needs of each individual situation.

General Critiques

Critiques are usually focused on one particular variety of Individualized Instruction. Frequently, however, they focus their attack at the broader concept itself. While the characteristics of Individualized Instruction that are criticized are generally applicable to all types of Individualized instruction, some are not. Responses by the different strands of Individualized Instruction whom the criticism does not apply are abundant. They are quick to point out to the critics that not all individualized instruction is lie this.

The article "Individualization: The Hidden Agenda", by Ronald T. Hyman is an example of one such critique. What Mr. Hyman is concerned with are the latent functions of Individualization. He is aware of and gives examples of two of the manifest function, the segmentation of material and student self-pacing. He criticizes the segmentation of material by writing "Segmented Junk is Still Junk" (Hyman, 1973, p.2). His point is that in the push for individualization, many peoples definition is to divide the subject matter up into segments and teach it at a self taught level. There is no concern for what is really the problem, and that its the subject matter itself. He claims that what individualization does not do is to alter the subject matter based on the needs of the student. Without doing this, there is a compromise of Individualized Instruction. The concept of individualization that he offers should be concerned with releasing the potential of the student. To do this, there must be an "...emphasis...on who the pupil is, what he can become, and how he interacts with people and objects around him" (Hyman, 1973, p.4).

Other criticisms that he has with the current usage of Individualized Instruction are:

1 "Individualization...maintains the status quo. The power and authority of the teacher are key aspects of the status quo" (Hyman, 1973, p.5).
2) "With the isolation of the pupil comes the loss of group camaraderie" (Hyman, 1973, p.5) stemming from #2 above are:
3) a loss of "...the very essence of democracy...the feeling of responsibility to our fellows" (Hyman, 1973, p.5)
4) "...the loss of group interaction leads to the minimizing of peer teaching from which, both peer teacher and student would benefit" (Hyman, 1973, p.5).
5) "...the loss of interaction that results in class discussion" (Hyman, 1973, p.5).

He goes on to claim that in order to complete a course in Individualized Instruction, a student must be able to study alone, follow directions, remain quiet, listen, and follow orders (Hyman, 1973, p.6). If he succeeds he is quiet, docile, subordinate, and dependent. Ironically, these are some of the issues that individualization is supposed to address. He then claims that schools pre-adopt children to the industrial bureaucracy by preparing them to work alone and follow orders (Hyman, 1973, p, 6).

Unfortunately, this attack was too broadly based, and therefore many of his criticisms, including the loss of group interaction leading to less peer teaching, when applied to PSI for instance, would not hold. For in the Keller setting, one of the main methods of instruction and feedback is peer-tutoring.

The main point to be made was not lost, however. He prescribed that teachers must vary their teaching techniques from small groups to one-on-one work to large lectures, based on the needs of the students.

Conclusion

Individualized Instruction comes in many forms, from Audio-Tutorials to Computer Assisted Instruction. There are many common themes among them. Foremost of these themes is the effort to improve education, The principles that Individualized Instruction is built on, regardless of specific type, are the same principles that all of education is built on.

Even if all of the principles that are part of the theoretical construct of one of these types of Instruction are sound principles, this is not to say that the principles of the Individualized Instruction are all of those in Education. Because not all of the underlying principles of Education are addressed, group interaction for example, Individualized Instruction has its limitation. This fact must be realized in order for Individualized Instruction to be improved.

Each type of instruction addressed the effort to improve with a different set of prescription. All have been heavily criticized, yet that is to be expected. As Henry Olds (1985, p.2) put it "Most schools are still unsure about acknowledging the reality of the hand calculator as a tool..." Change is a slow process, how long did it take for the calculator to be accepted in schools? With every innovation comes resistance to change, and rightfully so. It would be foolish to incorporate every new idea that came into the schools within a year of its inception. If something cannot withstand criticism then it should not be a part of the school system.

Individualized instruction is still a relatively recent innovation, and will remain under scrutiny until several criticisms are accounted for. Resistance to change will delay the implementation of these innovation, even after their limitations are accounted for. Individualized Instruction will then carry out its proper role in the improvement of education.

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